MONTHLY PROGRESS REPORT
LITTLE JOE II TEST LAUNCH VEHICLE

Report No. 21

10 December 1964

Reference: Par. 3.4.1 of NASA Statement of Work
GDC-62-361 Revised 21 September 1964

NASA CONTRACT NAS 9-492

CONTENTS

CONTENTS (Continued)

CALENDAR OF EVENTS

November 5	Convair personnel attended meeting at WSMR with NASA-MSC on schedule status for Mission A-002 (Little Joe II 12-51-1/BP-23).
November 5 - 6	Messrs. P. S. Jaschke, O. P. Littleton and M. A. Silveira, NASA-MSC, visited Convair for coordination purposes.
November 11 - 12	Mr. M. A. Silveira, NASA-MSC, visited Convair for coordination purposes.
November 13	Messrs. T. W. Batson, J. F. Proctor and M. P. Ragusa, NAA-S&ID, visited Convair for interface coordination.
November 16	Messrs. G. Hyman, L. Riekert and L. T. Morris, GE-ASD, visited Convair to review qualification status and the FRR report for Mission A-002 (LJII 12-51-1/BP-23).
November 16	Mr. George Ratkovic, Aeroject-General Corp./Downey, visited Convair for coordination of the Little Joe II 12-51-2 primacord mockup.
November 19	Convair personnel visited NASA-MSC to attend preliminary planning meeting concerning Mission A-004 (Little Joe II 12-51-3/AFRM-002).
November 23	Convair personnel attended a preliminary readiness review (PRR) at NASA-MSC for Mission A-002 (Little Joe II 12-51-1/BP-23).
November 23 - 30	Mr. E. H. Jones, NASA-WSMR, visited Convair for coordination purposes on Mission A-003 (Little Joe II 12-51-2/BP-22).

COMING EVENTS

December	Convair personnel to visit NASA-MSC to negotiate contract changes.
December 2 - 3	Messrs. M. E. Dell and P. S. Jaschke, NASA-MSC, will visit Convair for the purpose of program review.
December 4	Convair will attend the FRR at WSMR.
December 8	Launch of Mission A-002 (Little Joe II 12-51-1/BP-23).

SECTION I

A. CONTRACT STATUS

1. Amendment No. 13 dated 9 November 1964 incorporated CCP No. 138, 139, 143, 148, 150, 152 through 159, 161 and 162 into the contract at an increase in program price of $868,443, including a fixed fee of $52,400. This amendment increased total estimated costs to $12,721,679, plus a fixed fee of $815,174, for a total program price of $13,536,853.

2. Amendment No. 14 is being processed by NASA as a result of negotiations conducted on 26 and 27 October 1964 and will incorporate specified portions of CCP No. 160, 163 and 168 into the contract at an increase in progam price of $436,040, including a fixed fee of $22,959.

3. During the month of November, 1964, Contract Change Authorization No. 67 through 70 were initiated by NASA.

4. Tentative plans were made in October 1964 to negotiate CCP No. 164A through 171 during the month of November 1964. Negotiations were not accomplished during November and have now been tentatively rescheduled for the week of 14 December 1964.

B. SYSTEMS INTEGRATION/INTERFACE

1. North American Aviation - Space and Information Systems Division continued coordination of spacecraft/launch vehicle electrical interface for BP-22. Design of spacecraft umbilical, launcher changes and BP-22 type disconnect set testing is proceeding on schedule, with test starting in December.

2. Aerojet General Corporation - Coordinated configuration of nozzle components in support of BP-23 and reviewed shaped charge installation with the associated test program in support of BP-22.

3. Thiokol - Routine coordination in support of the Little Joe II program continued.

SECTION II

A. ENGINEERING

1. Vehicle

a. Structural Design

A center Algol manhole cover was designed to permit access into the vehicle for 12-51-2 configuration. Factory and field liaison continued on an as-needed basis.

b. Vehicle Control and Instrumentation

Vehicle 12-51-1 field checkout has been completed, along with interface and integrated tests with the payload.

A spin motor rate detection circuit was added for the roll rate gyro.

Qualification testing has been completed on all components and subsystems, including the range safety subsystem battery and safe/arm units.

Detail design for vehicle 12-51-2 is nearing completion. Check-out procedures are being prepared.

c. Reaction Control and Aerodynamic Control Systems

Activity in these areas was confined to preparation of 12-51-1 vehicle for launch.

Activity for December

Support of launch operations at WSMR will continue. Subsystem design for vehicle 12-51-2 will be completed and along with procedures will be reviewed with the NASA. Subsystem checkout on vehicle 12-51-2 will be started at San Diego.

2. Launcher and GSE

a. Launcher

Design of the upper mast modification and umbilical installation for BP-22 and AFRM-002 has been completed. Liaison on the mast fabrication and drawing maintenance continued on an as-needed basis.

b. GSE

Design of the umbilical rigging fixture for BP-22 and AFRM-002 has been completed and design for the range safety system installation platform for BP-22 has been started.

Activity for December

Testing of the umbilical retract mechanism using actual disconnect equipment will be started in mid-December and completed early in January.

3. Technical Support

a. Control Dynamics

Trajectory dispersion studies were completed for Mission J (Apollo A-002), delineating the effects on mission performance of such factors as thrust, drag, wind, hinge moment, pitch command time constant, and pitch-up timing.

The integrated control system-vehicle development tests have been reported by GDC-64-332, Integrated Attitude Control System Tests, 30 November 1964.

A special five-degree-of-freedom digital program was formulated to explore the pitch-up maneuver cross-coupling at angles of attack which were beyond the range of the MSC analog simulation. The effects of unsymmetrical control gains were explored and found to be within acceptable limits for a satisfactory mission.

b. Weight Analysis

Monthly Weight and Balance Report No. 30 was published. Report No. 31, incorporating the final weight statement for vehicle 12-51-1 and adding vehicle 12-51-3, has been prepared.

Activity for December

A memo report on Mission J (A-002) trajectory dispersion studies will be published. Results of the interaxis coupling studies (five-degree-of-freedom) for Mission J will be reported.

Analog and digital simulations of Mission N (A-003) and P (A-004) will be conducted to establish ballast requirements, RCS requirements (or not), and preliminary gains for autopilot control and pitch command.

4. Reliability and Quality Control

a. Design Review and Monitoring

Convair and vendor drawings and functional test and operation checkout procedures are continually reviewed for adequacy of quality control and reliability assurance provisions. A total of 39 Convair and vendor drawings or drawing changes were reviewed during the month.

Data documents from 27 vendors were reviewed. Data requirements include drawings; specification, reliability failure mode analysis, reliability predictions; service experience data; qualifications test reports; status, operating, and checkout data; and quality-control program data.

b. Component Selection and Vendor Monitoring Program

During the month, emphasis continued on selection of reliable components. A total of 67 advance bills of material (ABMs) were reviewed to ensure that vendors would be required to comply with adequate reliability and quality control provisions.

A total of 46 purchase orders were reviewed. Only vendors with demonstrated ability to produce reliable components of the type desired were awarded purchase orders.

c. Failure Analysis

Status of all failure analyses reports (FARs) is summarized as follows:

Total FARs initiated during reporting period	16
Total FARs initiated to date	164
FARs closed to date	132
FARs remaining open	32

All inspection reports requiring material review and action are summarized each month in the Monthly Quality Report.

d. Reliability Analysis and Measurement Program

Updated failure analysis and reliability estimates are included in the Quarterly Reliability Status Report.

e. Test Activities

(1) The Repco command receiver has successfully completed qualification testing at Convair.

(2) The Gulton battery to be used with the WSMR command destruct system is continuing in qualification testing.

(3) The hydraulic actuator assembly qualification testing has been successfully completed.

(4) Partial re-qualification testing of the American Wiancko rate gyro package has been initiated. This testing is the result of package redesign by American Wiancko.

(5) Qualification testing of the Beckman and Whitely destructors has been completed. Both high energy and low energy units exhibited failures during the high temperature tests, sand and dusts tests, and humidity tests. A high energy unit failed to ignite the primer after bridgewire burn-out during the locked rotor test.

f. Training

Convair Training Section conducted 108 hours of instruction for NASA soldering certificates during the month.

g. First-Article Inspection

One first-article inspection was conducted this month.

h. Quality Performance Audits

Quality program procedures, test instructions, process specifications and certifications are being audited, and corrective and preventive action is initiated as required. These audits ensure that procedures are being followed.

i. Vendor Quality Control

A total of 8 supplier facility evaluation surveys were conducted and approved to ensure that suppliers are meeting Convair quality assurance requirements.

j. Process Control

A total of 256 solution control analyses were performed on 59 tanks that are available for all production programs. A calibration survey of 5 ovens and furnaces was conducted. A total of 25 incoming material evaluation tests were performed.

k. Fabrication Inspection

Detailed inspection results are being submitted as a part of the Monthly Quality Report.

l. Surveillance

A weekly surveillance of all inspection and factory areas, including segregated stockrooms for Little Joe II material, for conformance to Inspection Check Lists is continuing. Corrective and preventive action is being initiated as required.

SECTION III

A. MANUFACTURING

1. Material

An all-out effort is continuing in support of Vehicle 12-51-1 at WSMR. As of this date, all production material/parts have been shipped and are available at the base. There are a few spare items still due but they are expected to be shipped by 4 December 1964.

The majority of items required for Vehicle 12-51-2 have been released and purchase orders placed. Substantial quantities of parts have been received and are being received daily. All material is being handled on an expedite basis. A complete report of all items released has been prepared by Engineering Work Order package for follow-up and scheduling purposes.

It is anticipated that the shortage count will be high for a time, but will decrease rapidly to a point where a small number of items will fall in the problem category. Generally, parts released for 12-51-2 are electrical hardware type with short lead times. There still are some problems on delivery of certain hydraulic components such as the Randall actuator and the Markite potentiometer but sufficient quantities of these items are expected by 9 December 1964.

2. Tooling

The planning required to rebuild "Little WSMR" has been released. Provisions have also been made in the system to maintain "Little WSMR" compatible with "Big WSMR".

Planning for the 12-51-2 vehicle, the launcher and the GSE is being processed in accordance with program schedules. Premium time is being required in both the mechanical and the electrical planning sections to maintain schedule requirements.

December Activity

Planning will continue to support the schedule requirements for 12-51-1 and 12-51-2 firings. It is expected that premium time will be required for both the processing of the engineering releases and in support of the factory liaison.

The engineering releases for the rigging fixture have been received. The fabrication task is expected to be completed in time to support Dept. 131 in mating the rigging fixture and the new launcher masts.

3. Fabrication and Assembly

Vehicles 12-50-3 and 12-50-4	In storage at San Diego.
Vehicle 12-51-1	In launch operations at WSMR. Factory support available on an expedited basis as required.
Vehicle 12-51-2	In work in Final Assembly. An all-out effort is being made to meet the present schedule. This includes a very close liaison with Engineering and material groups, and an extended work week.
Vehicle 12-51-3	In Final Assembly to latest firing configuration.
Vehicle 12-51-4	Fore and aft bodies complete. Held in fixture pending mating and Final Assembly.
Launcher No. 2	Mast rework for NAA umbilical and updating of launcher to 12-51-2 firing configuration in work.

San Diego operational facilities are being modified and updated to accurately simulate the launch operations facilities at WSMR.

GSE

The manufacture of the new dual and RF Command Consoles is in work. Modification of the consoles at WSMR will be accomplished after 12-51-1 firing.

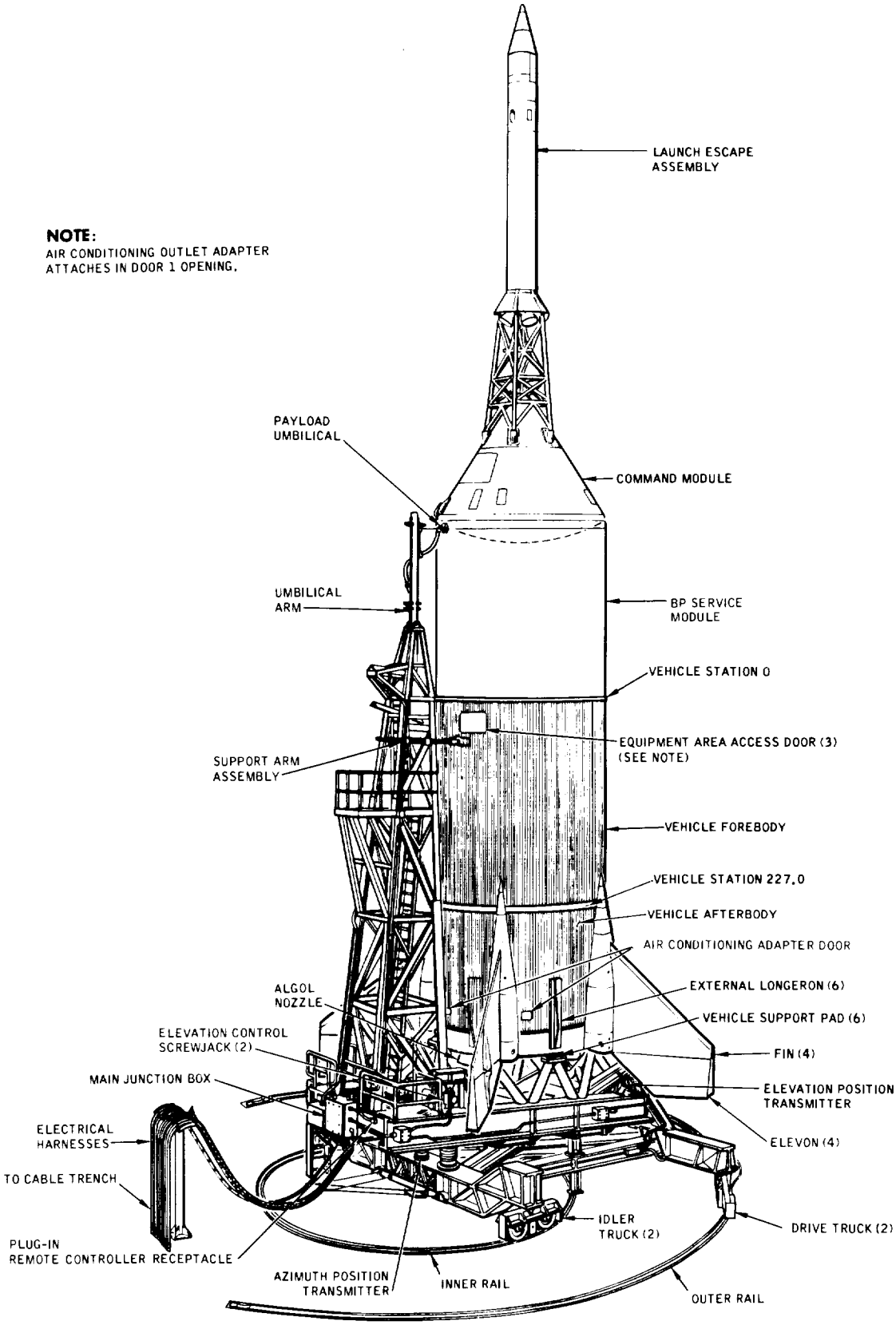

Figure 1. Launch Vehicle 12-51-1 Launcher

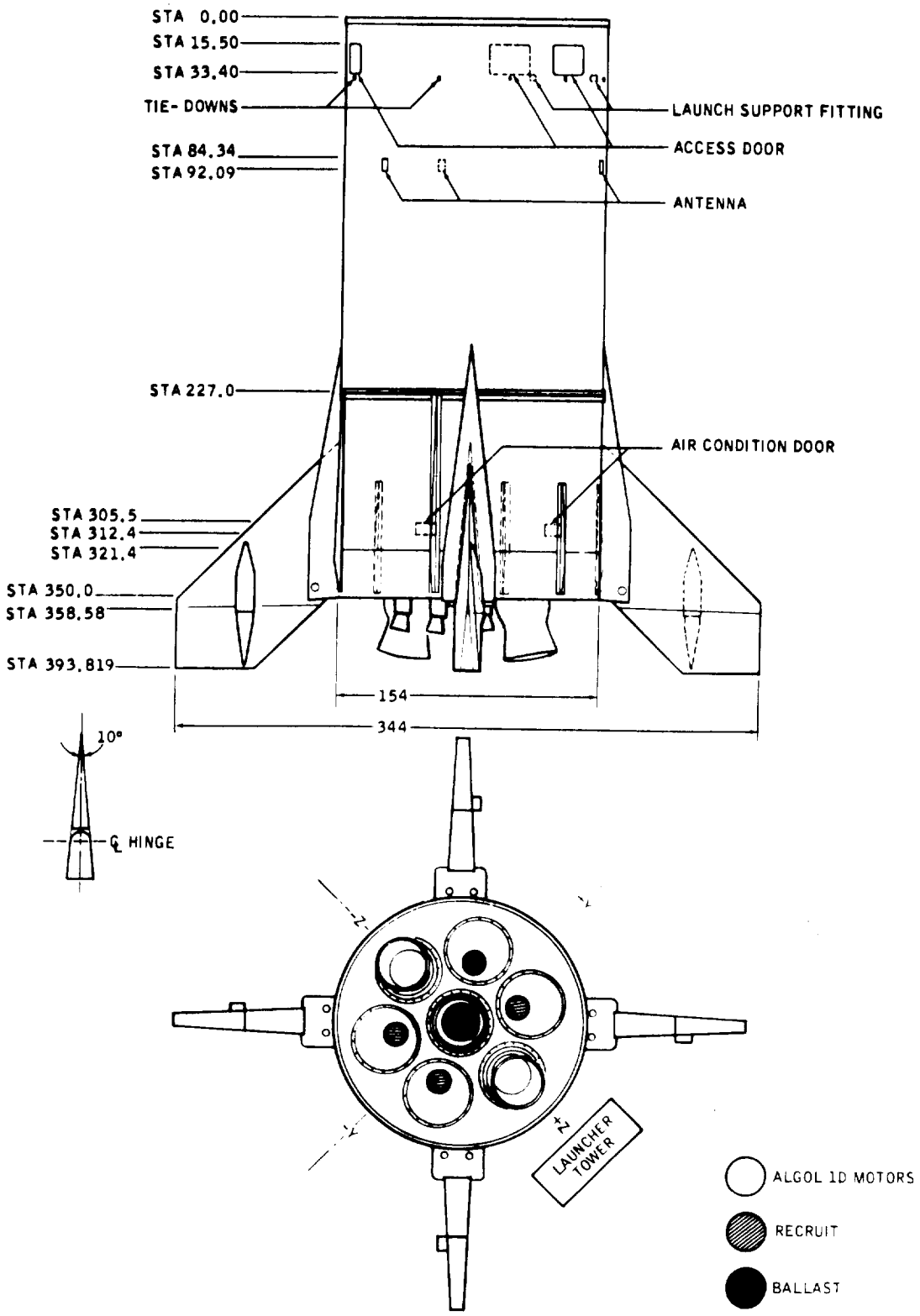

Figure 2. Vehicle 12-51-1 Attitude Control

Table I. Little Joe II Mission Definitions
(Figures are approximate values)

Mission Item	E Very High Altitude	F High Dynamic Pressure	J Maximum Dynamic Pressure	L High Altitude	M Intermediate Altitude	N High Altitude	P Intermediate Altitude
Vehicle Version*	-51	-50	-51	-51	-51	-51	-51
Payload (lb.)	14,500-29,000	25,000	27,500	28,000	28,000	28,000	28,000
Main Motors Model	7 Algols 1D	1 Algol 1D	2 Algols 1D	5 Algols 1D	4 Algols 1D	6 Algols 1D	4 Algols 1D
Boosters	0	6 Recruits	4 Recruits	0	6 Recruits	0	5 Recruits
Main Motor; Staging	4-3	One stage	One stage	3-2	2-2	3-3	2-2
Ballast in Little Joe II	0	0	8,600 lb.	0	5,000 lb.	7,500 lb.	5,000 lb.
Test Point Altitude (ft.)	150,000-190,000	18,000-20,000	30,000-39,000	100,000-120,000	70,000-80,000	100,000-120,000	70,000-80,000
Mach No.	4.5-5.3	0.94	1.25-1.75	3.25-4.25	2.4-3.0	3.25-4.25	2.4-3.0
Dynamic Pressure (psf)	10-30	535-635	680-880	100-125	300-470	100-225	300-470
Flight Path Angle (deg.)	85	55-60	65-85	34-41	40-52	34-41	40-52
Thrust	0	Terminated	< 100,000 lb.	0	< 100,000 lb.	0	< 100,000 lb.

* Version - 50 fixed fins Version - 51 movable fins, with control system

SECTION IV

A. LAUNCH OPERATIONS

1. Launch Site Operations

Two-shift launch facility operation was initiated on 2 November and continued during the period of vehicle checkout. During the report period, Launch Vehicle systems checkouts were completed, and integrated Spacecraft/ Launch Vehicle checkouts were initiated. The following OCI's were accomplished:

Vehicle Power System and TM Hardline - 12-86011

Ignition Resistance - 12-86206

Ignition Firing Current - 12-86207

Autopilot Sensors - 12-83006

TM Conditioning and Transmission - 12-81040

RCS Motor Chamber Pressure Instrumentation - 12-81044

Aft Bulkhead Accelerometer Installation - 12-81063

Algol Motor Chamber Pressure Instrumentation - 12-81064

H_2O_2 and GN_2 Pressure Instrumentation - 12-81056

Logic and Control and Fin Integration - 12-83008

Algol Nozzle Angle Adjustments - 12-82021

RF Command System - 12-83224

Hydraulic System Leak Check - 12-83106

Installation of PETN Primacord - 12-82029

Installation of Shaped Charges on Algol Motors - 12-82023

Range Safety Destruct System - 12-83223

Lanyard Pull Test - 12-83218.

Installation of the fourth (final) fin on the vehicle was accomplished after completing rework of the fin trailing face to correct interference with the launcher support pad. Operational checkouts were completed for the spare fin and the Control Systems Test Facility (CSTF) was deactivated.

Engineering design and installations were completed for incorporation of roll rate gyro rotational speed monitoring capability. An additional Vidar voltmeter was installed in the dual console and facility circuitry was modified for this function.

Tests were conducted to obtain RCS motor control valve operating current signature for all installed valves.

Modifications to provide an exponential pitch-over input signal to the inflight instrumentation system were completed.

Installation of the Range Safety Destruct System was completed and a lanyard pull test (OCI 12-83218) was accomplished.

Functional testing of all flight components was completed with check-outs of the AN/DRW-11 receivers.

Buildup of TM trailer No. 2 was completed with the installation of Sanborn recording equipment and discriminators. NASA validation was completed and the trailer was placed in operation. Continued assistance was provided to NASA for operation of both telemetry trailers on a two-shift basis, to support spacecraft and launch vehicle checkout operations.

Coaxial connectors for telemetry transmitters A and B were reworked to correct antenna problems.

Functional testing and calibration of spare components was continued throughout the report period.

2. Operations Procedures and Support

Review, revision or rewrite of Operational Checkout Instructions continued throughout the report period, as required to support program scheduling.

The Launch Vehicle Countdown Procedure was completed and issued. The Test Director's countdown, which integrates the Spacecraft countdown OTP-010 and the Launch Vehicle Operations Manual OCI 12-08901, and the integrating document for OTP-008 and OCI 12-86019, Integrated Checkouts, were approved.

A Preliminary Flight Readiness Report was presented to the Flight Readiness Review Board at Houston, on 23 November.

December Activity Planned

Spacecraft/Launch Vehicle Integrated operations will be completed and a final inspection, cleanup and open item review will be conducted.

The Flight Readiness Report will be completed and GD/Convair personnel will participate in the Flight Readiness Review.

Participate in simulated countdown and final countdown for vehicle 12-51-1.

Accomplish launch of vehicle 12-51-1.

Participate in post-launch recovery operations.

Participate at WSMR and Houston, in preparation of post-launch reports.

Inspect launcher and pad, accomplish preventive maintenance and secure launch facility.

B. LOGISTICS

November activity consisted of; (1) a reduction in the spares shipping backlog to seven items. (2) Spares selection activity continued from design changes affecting Vehicle 12-51-2 and 12-51-3 together with changes to Launchers No. 1 and 2. A list of spare parts from the North American portion of the launcher task was compiled and recommended to North American for purchase. (3) Preparation of the Hardware List revision. (4) Preparation of the Hardware Utilization List as a part of the Data Acceptance Package for Vehicle 12-51-1. (5) Processed returned GFP Spares and GSE items from WSMR for repair by GD/Convair or the vendor.

December activity will consist of shipment of remaining spares to support Vehicle 12-51-1 launch, and selection of supporting spares as a result of design changes to the Launchers and GSE being reworked to the BP22 and AFRM-002 configurations.

SECTION V

A. DOCUMENTATION

1. Periodic Reports — All periodic reports scheduled for submittal during November were submitted on schedule.

2. Other Scheduled Documents — No other scheduled documents were submitted.

3. Unscheduled Documents — The following unscheduled documents and revisions were submitted during November.

Requirement	Submitted	Subject	Reference	Remarks
3.2.1.1	2 November 1964	GD/Convair Report No. 12-09294, GSE Performance & Interface Spec. for Load Bar, Three Recruit Installation, Dated 22 October 1964 (P/N 12-91036-1)	ESN 1762	Submitted for Approval
3.2.1.1	2 November 1964	GD/Convair Report No. 12-09295, GSE Performance & Interface Spec. for Rigging Fixture, BP 22 and AFR 02 Umbilical (P/N 12-91035-1) dated 16 October 1964	ESN 1762	Submitted for Approval
3.6.2	2 November 1964	GD/Convair Test Report No. GD/C 64-297, Airborne Battery System Protective Diode Assembly Temperature Test, Dated 22 October 1964	ESN 1763	Submitted for Information

Requirement	Submitted	Subject	Reference	Remarks
3.7.9	2 November 1964	GD/Convair Report No. 12-06106, Servicing & Storage of Yardney 5500 Battery for Model 12 LJ II, Revision A dated 26 October 1964	ESN 1764	Submitted for Information
3.7.9	2 November 1964	GD/Convair Report No. 12-06107, Servicing & Storage of Yardney 65100 Vehicle Power Batteries for Model 12-LJ II, Dated 8 October 1964	ESN 1764	Submitted for Information
3.7.2	2 November 1964	GD/Convair Report GD/C 64-311, Test Report, Quality Assurance Tests on RAWCO Amplifier Package, Dated 24 October 1964	ESN 1767	Submitted for Information
3.5.2	2 November 1964	GD/Convair Report GD/C 63-102, Airloads for Structural Design of LJII, Revision 2, dated 21 October 1964	ESN 1768	Submitted for Information
3.6.3	3 November 1964	Failure Data	ESN 417WS	Failure Analysis Report No. 10168

Requirement	Submitted	Subject	Reference	Remarks
3.6.3	4 November 1964	Failure Data	ESN 425WS	Failure Analysis Report No. 10170
3.6.3	5 November 1964	Failure Data	ESN 434WS	Failure Analysis Report No. 10179
3.6.1	13 November 1964	GD/Convair Report GD/C 64-234, LJII Qualification Status Summary, Vehicle 12-51-1, Revision B dated 6 November 1964	ESN 1797	Submitted for Information
3.6.3	13 November 1964	Failure Data	ESN 1798	Failure Analysis Reports 10168, 10730, 10707 & 10735
3.6.3	16 November 1964	Failure Data	ESN 462WS	Failure Analysis Report No. 10166
3.6.3	23 November 1964	Failure Data	ESN 475WS	Failure Analysis Report No. 10172
3.6.3	23 November 1964	Failure Data	ESN 1858	Failure Analysis Reports 10166, 10711, 10717, 10719, 10710, 10712 & 10718
3.6.2	23 November 1964	GD/Convair Report GD/C 64-280, Vibration Qualification Test Report For LJII 12-51-1 Vehicle Instrumentation System, Dated 30 October 1964	ESN 1859	Submitted for Information

Requirement	Submitted	Subject	Reference	Remarks
3.6.2	23 November 1964	GD/Convair Report GD/C 64-322, Vibration Qualification Test Report, Hydraulic & Pneumatic System, LJII Aerodynamic Attitude Control System, Dated 18 November 1964	ESN 1859	Submitted for Information
3.7.8	23 November 1964	GD/Convair Report GD/C 64-224, Qualification Test Procedure for the Hydraulic Accumulator, LJII, dated 31 July 1964	ESN 1859	Submitted for Information
3.7.8	23 November 1964	GD/Convair Report GD/C 64-295, Specification for Reliability & Qualification Testing of the Missile Destructor (Safe & Arm Device) of the Destructor Subsystem of the LJII Launch Test Vehicle, Dated 21 October 1964	ESN 1859	Submitted for Information
3.7.8	23 November 1964	GD/Convair Report GD/C 64-309, Qualification Test Procedure for Hydraulic Servo Cylinder, Aerodynamic Attitude Control, GD/C P/N 12-40100-805 dated October 1964	ESN 1859	Submitted for Information

Requirement	Submitted	Subject	Reference	Remarks
3.7.8	23 November 1964	GD/Convair Report GD/C 64-315, Specification for Qualification Testing of the AC/DC Converter, Dated 3 November 1964	ESN 1859	Submitted for Information
3.7.8	23 November 1964	GD/Convair Report GD/C 64-324 Specification for Qualification Test of the Gulton Battery Powerpack used with Radio Receiver Set AN/DRW-11 dated 13 November 1964	ESN 1859	Submitted for Information
3.7.8	23 November 1964	GD/Convair Report SL-64-140, LJII Launcher A-14-024 Umbilical Disconnect Set Retaction Test Planning Report, Model 12 dated 2 November 1964	ESN 1860	Submitted for Information
3.7.2	23 November 1964	GD/Convair Report GD/C 64-312, Test Report, Ignition Timer/Sodeco Counter Compatibility dated 30 October 1964	ESN 1860	Submitted for Information
3.2.1.1	23 November 1964	GD/Convair Report 12-9297, GSE Performance & Interface Specification for Platform, Range Safety System, LJII P/N 12-91037, dated 27 October 1964	ESN 1860	Submitted for Approval

Requirement	Submitted	Subject	Reference	Remarks
3.6.2	23 November 1964	Rototest Lab. Inc. Report No. 5632, Vibration Testing on a Genistron R. F. Noise Filter, P/NGF6099	ESN 1861	Submitted for Information
3.6.2	23 November 1964	TeleDynamics Qualification Test Report No. 3538, for T-D 1291A1B2B Oscillators, T-D 1470-1-A Mount	ESN 1861	Submitted for Information
3.6.2	23 November 1964	Qualification Test Report for Eagle Signal P/N AT S 79 Corresponding to GD/C P/N 97-37225-012 to LJII Environments, dated 21 January 1964	ESN 1861	Submitted for Information
3.6.2	23 November 1964	Qualification Test Report for Eagle Signal P/N AT S 75 Corresponding to GD/C P/N 97-37225-013 to LJII Environments, Dated 21 January 1964	ESN 1861	Submitted for Information
3.6.2	23 November 1964	Walter Kidde Aerospace Div. Report R-1643 Supplement A, Vibration Test, Motor and Valve Assy. Development & Qualification (P/N 873945) Dated 16 July 1964	ESN 1861	Submitted for Information
3.6.2	23 November 1964	American Gyro Qualification Test Report A34-26877A, Pitch Over Controller, Model BB10A-1, P/N 25880, GD/C P/N 12-03102, LJII Test Vehicle	ESN 1861	Submitted for Information

Requirement	Submitted	Subject	Reference	Remarks
3.7.8	23 November 1964	Walter Kidde & Co. Report No. 151736, Acceptance Test Procedure, LJII Reaction Control System (892630) dated 3 August 1964	ESN 1861	Submitted for Information
3.7.8	23 November 1964	Wyle Lab. Test Procedure No. 3053, Vibration Qualification Testing on Autopilot System in Accordance with GD/C 64-230 Rev. B dated 25 August 1964	ESN 1861	Submitted for Information
3.6.2	27 November 1964	GD/Convair Report GD/C 64-319, Qualification Test Report, Accumulator, Hydraulic, LJII Aerodynamic Attitude Control System, GD/C P/N 90-03500-003 dated 13 November 1964	ESN 1861	Submitted for Information
3.6.2	27 November 1964	Walter Kidde & Co. Report No. R-1648, LJII Catalyst Bed Life Test, Revision A dated 9 November 1964	ESN 1861	Submitted for Information
3.7.2	27 November 1964	GD/Convair Report GD/C 64-326, Test Report of Thermal Effects Vs. H_2O_2 Pressure Rise on LJII Reaction Control System for Vehicle 12-51-1, dated 19 November 1964	ESN 1861	Submitted for Information (Ref: RFC-3P2)

4. Approved Documents — The following documents were approved.

Requirement	Approved	Subject
3.2.1.1	NASA LTR. PP8-64-J74, Dated 19 November 1964	GD/C Report 12-09294, GSE Performance & Interface Specification for Load Bar, Three Recruit Installation dated 22 October 1964 (P/N 12-91036-1)

5. December Activities — The following documents are scheduled for submittal during December

Requirement	Due Date	Subject
3.4.4	1 December	Weekly Launch Site Activities Report
	8 December	Weekly Launch Site Activities Report
	15 December	Weekly Launch Site Activities Report
	22 December	Weekly Launch Site Activities Report
	29 December	Weekly Launch Site Activities Report
3.11	1 December	Weekly Reliability Summary
	8 December	Weekly Reliability Summary
	15 December	Weekly Reliability Summary
	22 December	Weekly Reliability Summary
	29 December	Weekly Reliability Summary
3.3.2.2	4 December	PERT Report
	18 December	PERT Report
3.3.2.2	8 December	PERT Narrative Analysis
	22 December	PERT Narrative Analysis
3.8.4	1 December	Drawing List
	15 December	Drawing List
	29 December	Drawing List

Requirement	Due Date	Subject
3.3.3	15 December	Monthly Financial Management Report
3.4.1	10 December	Monthly Progress Report
3.4.5	10 December	Monthly Weight & Balance Report
3.6.4	10 December	Monthly Failure Summary
3.7.6	10 December	Monthly Quality Report

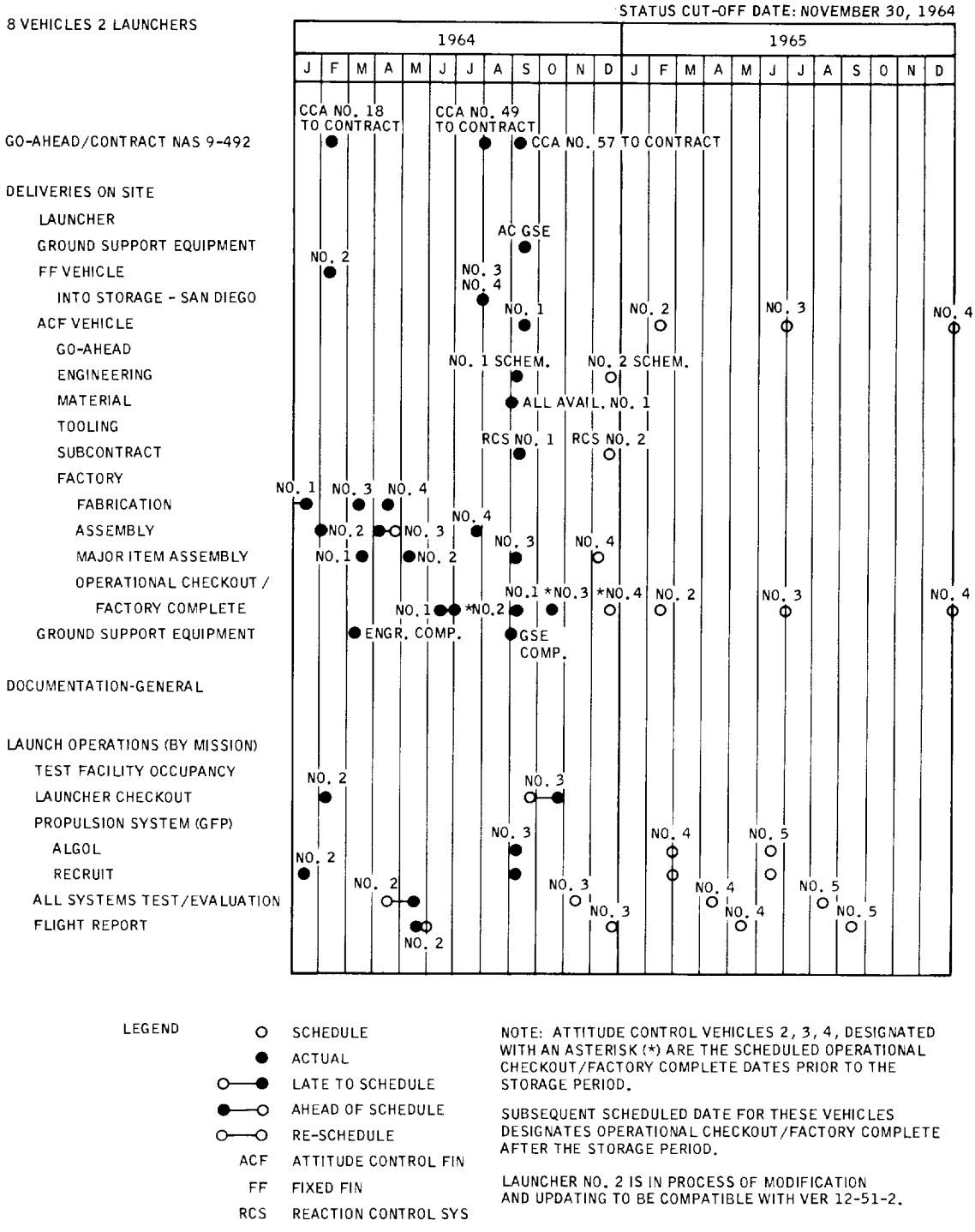

Figure 3. Milestones (Continued)

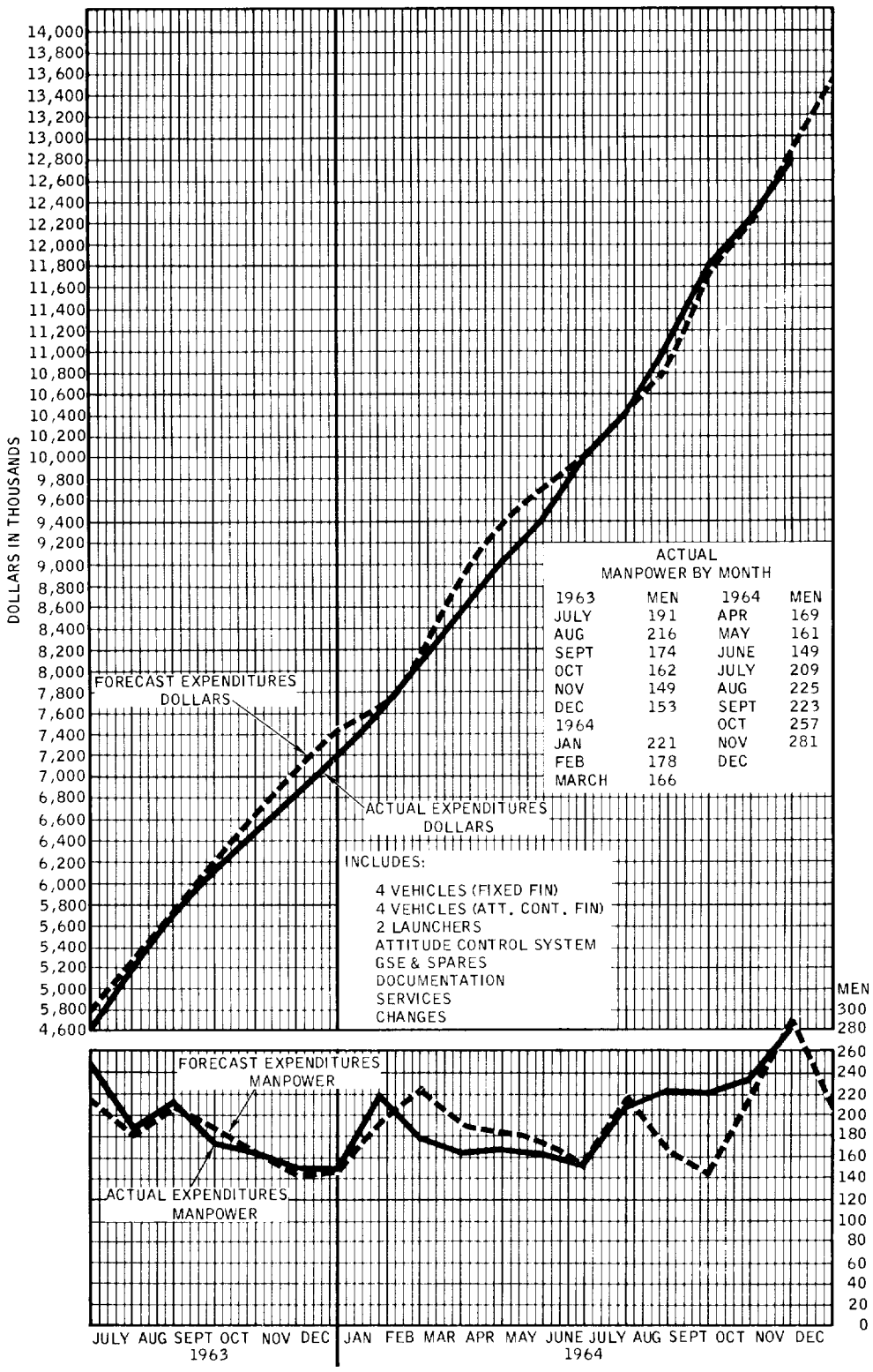

Figure 4. Expenditures by Month

SECTION VI

A. PROGRAM PLANNING AND CONTROL

1. PERT

PERT update reports, analysis reports, and current Network masters were submitted as stated in Section V.

Network 57C has been completed and will be implemented into the NASA PERT system on 11 December 1964.

2. Schedules

Affected Program Schedules have been revised to reflect NASA directed changes for delivery of Vehicles 12-51-2 and 12-51-3 to WSMR, per CCA No. 49, and storage of Vehicle 12-50-4 at the Convair plant in San Diego, per CCA No. 57.

3. WSMR Operations

Daily PERT Status Reports are being received from the Convair Operation at WSMR relating progress on Vehicle 12-51-1. Daily reporting will continue, from WSMR, to support the bi-weekly PERT Report to MSC, Houston until launch of the Vehicle.

4. Change Control

Contract Change Proposals No. 172 through 176 were submitted to NASA. These CCP's covered design changes to vehicles 12-51-2 and 3 required to perform their assigned missions and also cover related changes to the launcher facility and GSE; current changes to vehicle 12-51-1 Range Safety System, vehicle checkout procedures at WSMR; and reductions in documentation distribution.

Table II. Contract Change Proposal Status

CCP No.	Title	Initiated By	CPO	Ltr. No. To Cust.	Ltr. No. Cust. Reply	Sales Order No.
164A	Launch Operations Services	NASA	201-285A	11-2235 11/9/64	NASA CCAs No. 43, 49, 53 and 58	566-1-138
165	Effect of Revised Schedules	NASA	201-158C	11-2218 10/5/64	NASA CCAs No. 9, 13, 14, 18, 26, 43, 49, 52, 57, & 58	
166	Transporter Erector - Modif. of	NASA	201-281	11-2219 10/5/64	NASA CCA No. 60	566-1-152
167	Implementation of Vehicle 12-51-1 DEI Studies	NASA	201-288	11-2220 10/6/64	NASA CCA No. 59	566-1-149
169	Range Safety System in Kit Form	NASA	201-283B	11-2223 10/21/64	NASA CCA No. 56	566-1-147
170	Storage of Vehicle No. 12-50-4	NASA	201-294	11-2224 10/21/64	NASA CCA No. 57 & Amend. 1 thereto	566-1-153
171	Impelementation of Vehicle 12-51-1 DEI Changes	NASA	201-287	11-2225 10/21/64	NASA CCA No. 59	566-1-149
172	Extended Distribution of Documentation	NASA	201-293	11-2233 11/6/64	NASA CCA No. 55	566-1-150
173	Launcher Modification for BP-22 Umbilical Installation	NASA	201-195B	11-2236 11/10/64	NASA CCA No. 63	566-1-156

Table II. Contract Change Proposal Status (Continued)

CCP No.	Title	Initiated By	CPO	Ltr. No. To Cust.	Ltr. No. Cust. Reply	Sales Order No.
174	Vehicle and Instrumentation OCI Revisions	NASA	201-298	11-2244 11/19/64	NASA CCA No.	566-1-157
175	Design Changes for Vehicles 12-51-2 and 12-51-3	NASA	201-264	11-2246 11/19/64	NASA CCA No. 53	566-1-154
176	Range Safety System Requirements	NASA	201-306	11-2247 11/24/64	NASA CCA Nos. 56R1, 56R2, & 66	566-1-161

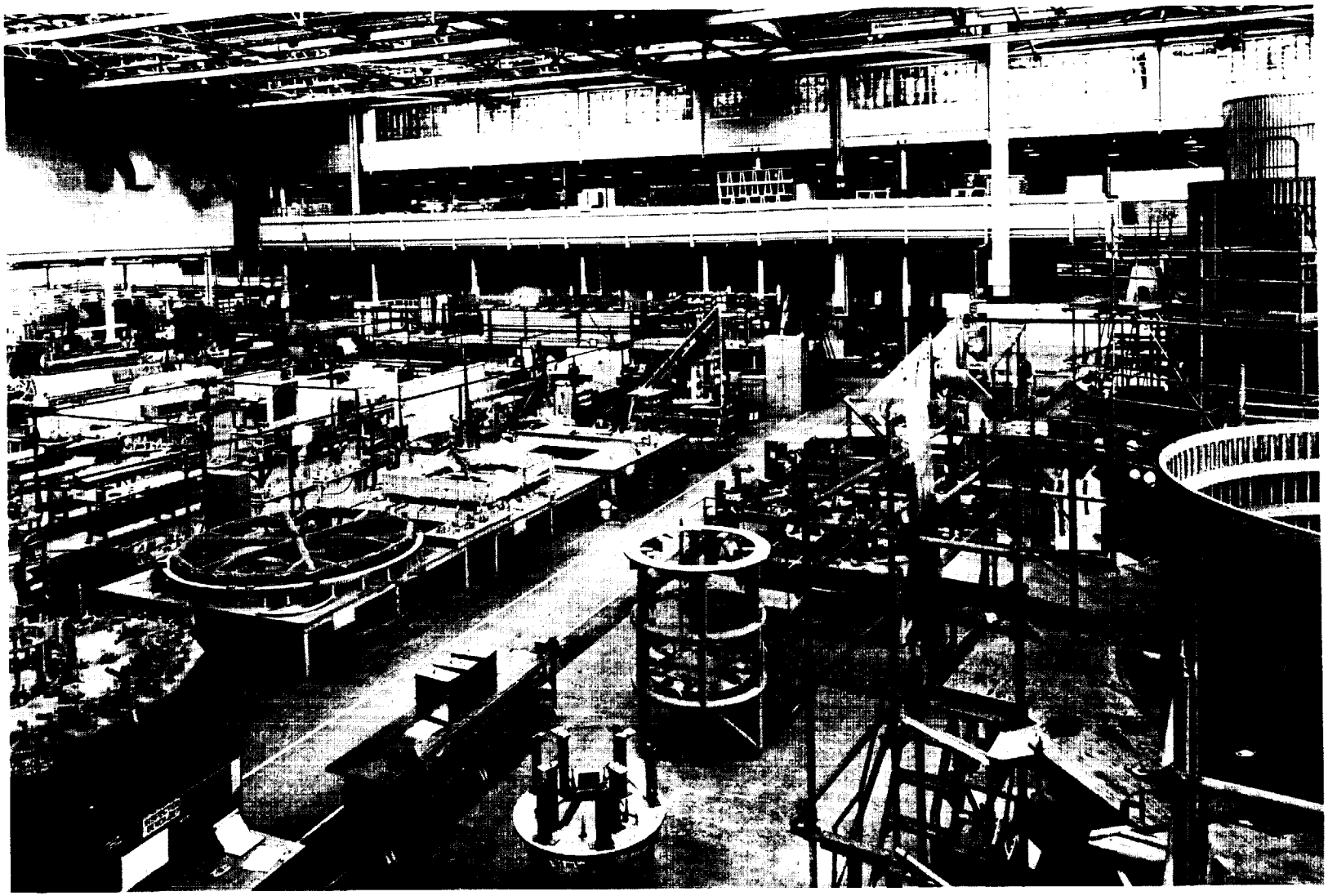

Figure 5. Experimental Department Subassembly Area — Forebody and Aftbody in Right Foreground

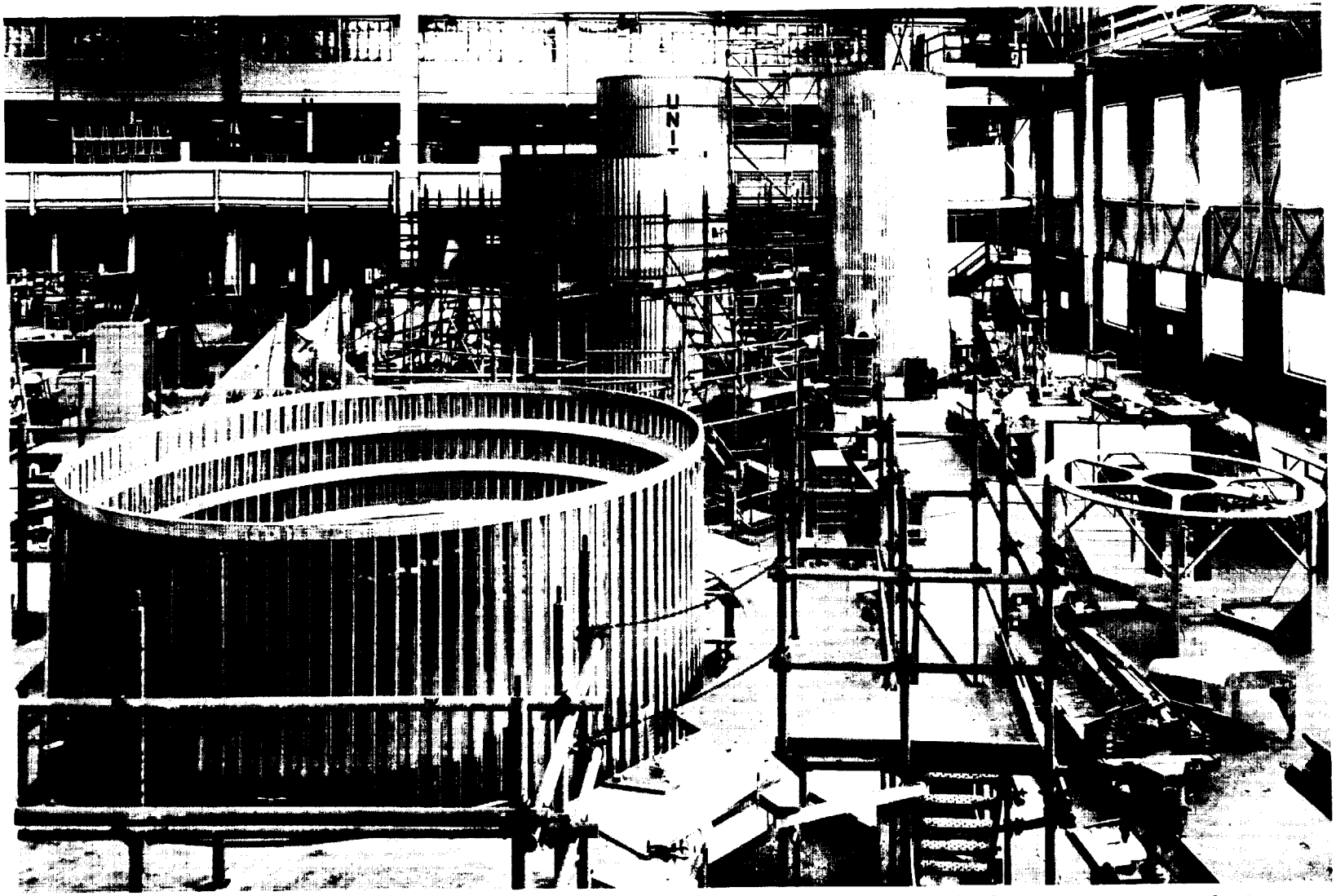

Figure 6. Experimental Department Major and Final Assembly Area — Vehicles 12-51-2, -3 and -4 in Work Status

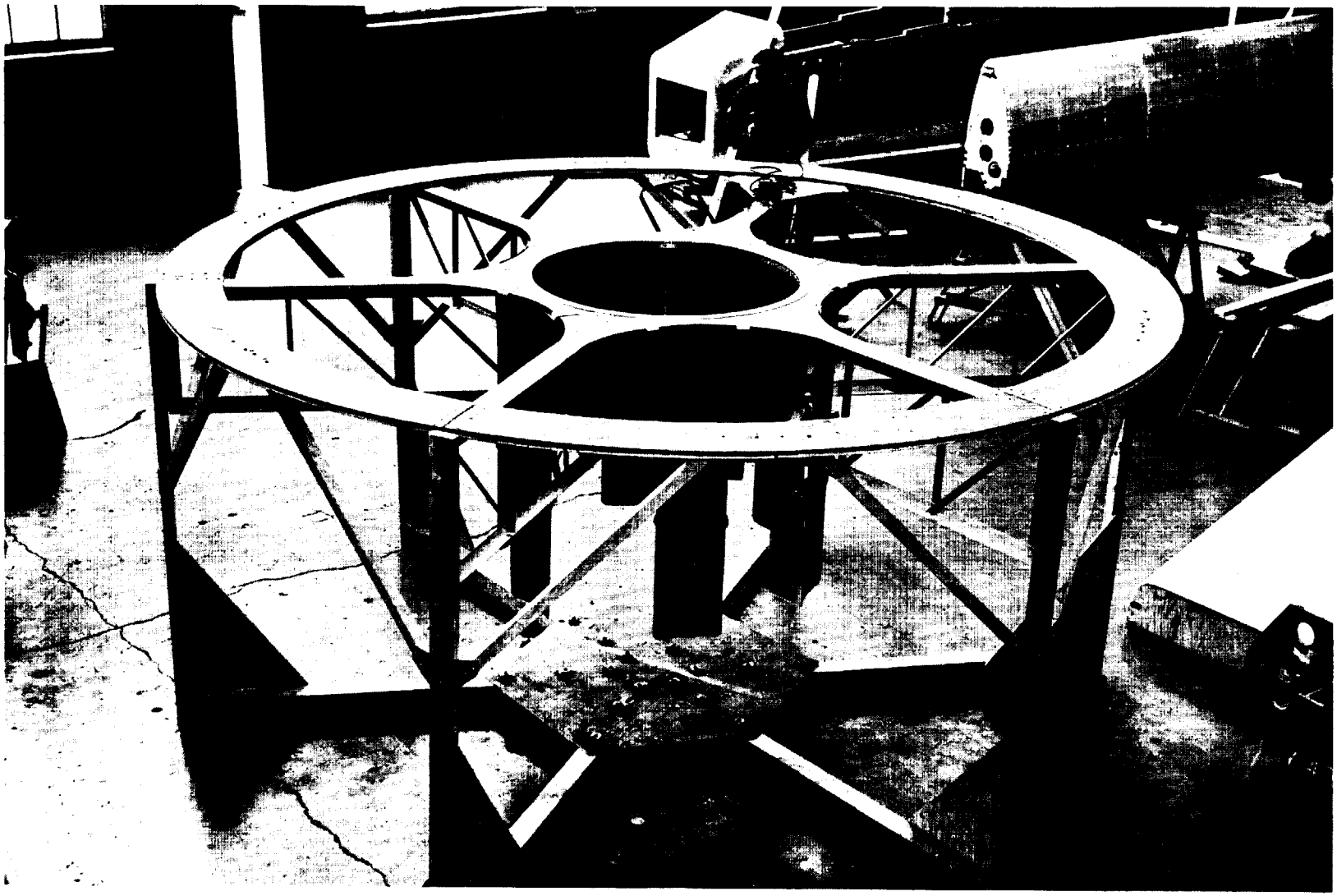

Figure 7. Destruct System Mockup (Vehicle 12-51-2 Firing Test)